



# INFLUENCE OF TYPE OF INSTITUTE, METACOGNITION, MARITAL STATUS AND THEIR INTERACTION ON CRITICAL THINKING

Novjeet Saini

## ABSTRACT

In the present study survey method was employed. The purpose of the present investigation was to study the Influence of Type of Institute, Metacognition, Marital Status and their interaction on Critical thinking. A sample of 250 Pre-Service Secondary School Teachers was selected by cluster random sampling from Government, Government aided and Private Institute. Critical Thinking Test developed by investigator was used to assess critical thinking of Pre-Service Secondary School Teachers. The data were analyzed using 3\*3\*2 Factorial Design Analysis.

**KEYWORDS:** Critical Thinking, Metacognition, Factor Analysis, Marital Status.

## INTRODUCTION:

Watson and Glaser (1980) defined Critical Thinking as a composite of attitude, knowledge, skills which include attitude of inquiry that involve an ability to recognize the existence of problem and acceptance of general need for evidence in support of what is asserted to be true knowledge of nature of valid inferences, abstractions and generalization in which weight and accuracy of different kind of evidences are logically determined and skill in employing the above attitude and knowledge.

McPeck (1981) defined the Critical Thinking as the analysis of good reasons for belief, understanding the various kinds of reason involve understanding complex meaning of field-dependant concept and evidence.

McCormick and Whittington (2000) reported that the use of problem sets, individual and group written reports, group presentations, and laboratory test were shown to emphasize higher cognitive levels, which in turn lead to better Critical Thinking skills in students.

Adey (2001) described the structure of thinking skills as being layered. One layer is a general processing ability. This is variously described as intelligence, working memory, formal operations, multivariate thinking, and higher order thinking skills. In a different layer, there is particular thinking skills of which critical and creative thinking are seen by Adey as key notes. He identified Critical Thinking as analytical thinking, a convergent type of thinking he described as divergent lateral- the type of thinking that generate new ideas. Other skills, which can be regarded as derivatives of these skills are evaluative thinking, exploratory thinking and hypothesizing.

Swartz (2003) summarized the key principals of Critical Thinking instruction, reflecting the need for both strategies:

- The more explicit the teaching of thinking is, the greater impact it will have on students.
- The more classroom instruction incorporates an atmosphere of thoughtfulness the more open students will be valuing good thinking.
- The more the teaching is integrated into instruction, the more students will think about what they are learning.

Paul (2004) defined Critical Thinking is self directed, self disciplined, self monitored and self corrective thinking. It presupposes assent to rigorous standards of excellence and mindfully command of their use. It entails effective communication and problem solving abilities, as well as commitment to overcome our native egocentrism and sociocentrism.

Moseley et al (2005) described the development of Critical Thinking skill is often listed as the most important reason for formal education because the ability to think critically is essential for success in the contemporary world where the rate at which new knowledge is created is rapidly accelerating. Although most educator agree that it is important to teach students the skill of Critical Thinking, there is much less agreement about the way in which learning to think critically is best achieved, especially for the students in high school.

Lai (2011) defined Critical Thinking includes the component skills of analyzing arguments, making inference, using inductive or deductive reasoning, judging or

evaluating, and making decisions or solving problems. Background knowledge is necessary but not a sufficient condition for enabling critical thought within a given subject. Critical Thinking involves both cognitive skills and disposition. These dispositions, which can be seen as attitudes or habits of mind, include open and fair mindedness, inquisitiveness, flexibility, a propensity to seek reason, a desire to be well-informed, and a respect for and willingness to entertain diverse viewpoints. There are both general and domain specific aspect of Critical Thinking. Empirical research suggests that people being developing Critical Thinking competencies at a very young age. Although adults often exhibit deficient reasoning, in theory all people can be taught to think critically.

## OBJECTIVE OF THE STUDY:

- To study the influence of Type of Institute on Critical Thinking of Pre-Service Secondary School Teachers.
- To study the influence of Metacognition on Critical Thinking of Pre-Service Secondary School Teachers.
- To study the influence of Marital Status on Critical Thinking of Pre-Service Secondary School Teachers.
- To study the influence of interaction between Type of Institute and Metacognition on Critical Thinking of Pre-Service Secondary School Teachers.
- To study the influence of interaction between Type of Institute and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers.
- To study the influence of interaction between Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers
- To study the influence of interaction between Type of Institute, Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers

## HYPOTHESIS:

- There is no significant influence of Type of Institute on Critical Thinking of Pre-Service Secondary School Teachers.
- There is no significant influence of Metacognition on Critical Thinking of Pre-Service Secondary School Teachers.
- There is no significant influence of Marital Status on Critical Thinking of Pre-Service Secondary School Teachers.
- There is no significant influence of interaction between Type of Institute and Metacognition on Critical Thinking of Pre-Service Secondary School Teachers.
- There is no significant influence of interaction between Type of Institute and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers.
- There is no significant influence of interaction between Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers

- There is no significant influence of interaction between Type of Institute, Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers

## METHOD:

### Sample:

The sample comprised 250 Pre Service Secondary School Teachers of Jalandhar and Kapurthala districts of Punjab state. The sample was selected by cluster random sampling technique. Out of 250, 50 Pre Service Secondary School Teachers belonged to Government Institute, 100 Pre Service Secondary School Teachers belonged to Government Aided Institute and 100 Pre Service Secondary School Teachers belonged to Private Institute. Moreover, gender wise 80 were male and 170 were females.

### Tools:

Keeping in the mind the demand and objectives of the study, standardized tools were used to assess Critical Thinking, Metacognition and Marital Status of the students. The tools used to assess Critical Thinking, Metacognition and Marital Status were Critical Thinking Test developed by the investigator, Inventory of Metacognitive Self Regulation developed by Howard, McGee, Shia and Hong (2000) and Effortful Control Scale by Lonigan & Phillips (2001) respectively.

### Design:

Survey method was employed for the present study. The present research aimed to study the Influence of Type of Institute, Metacognition, Marital status and their interaction on Critical thinking. There were 3 types of institute, namely, Government, Government Aided and Private Institute. There were 3 levels of Type of Institute, 3 levels of metacognition, 2 levels of Marital Status. Therefore, the data were analyzed with the help of  $3 \times 3 \times 2$  and  $3 \times 3 \times 2$  Factorial Design Analyses of Variance.

## RESULT AND DISCUSSION:

The objective was to study the influence of Type of Institute, Metacognition, Marital Status and their interaction on Critical Thinking of Pre-Service Secondary School Teachers. There were 3 Types of Institute, 3 levels of Metacognition and 2 levels of Marital Status. So data were analyzed with the help of  $3 \times 3 \times 2$  Analysis of Variance. The results are given in the Table 1

**Table 1: Summary of  $3 \times 3 \times 2$  Factorial Design ANOVA for Critical Thinking**

Source of Variance	Sum of Square	df	Mean Sum of Square	F Value
Type of Institute (A)	92.13	2	46.06	2.08
Metacognition (B)	32.61	2	16.30	0.74
Marital Status (C)	0.28	1	0.28	0.01
Type of Institute $\times$ Metacognition (A $\times$ B)	140.83	4	35.21	1.59
Type of Institute $\times$ Marital Status (A $\times$ C)	260.27	2	130.13	5.88*
Metacognition $\times$ Marital Status (B $\times$ C)	16.78	2	8.39	0.38
Type of Institute $\times$ Metacognition $\times$ Marital Status (A $\times$ B $\times$ C)	84.69	3	28.23	1.28
Error	5161.22	233	22.15	

\* Significant at 0.05 Level

From table 1, it can be analyzed that:

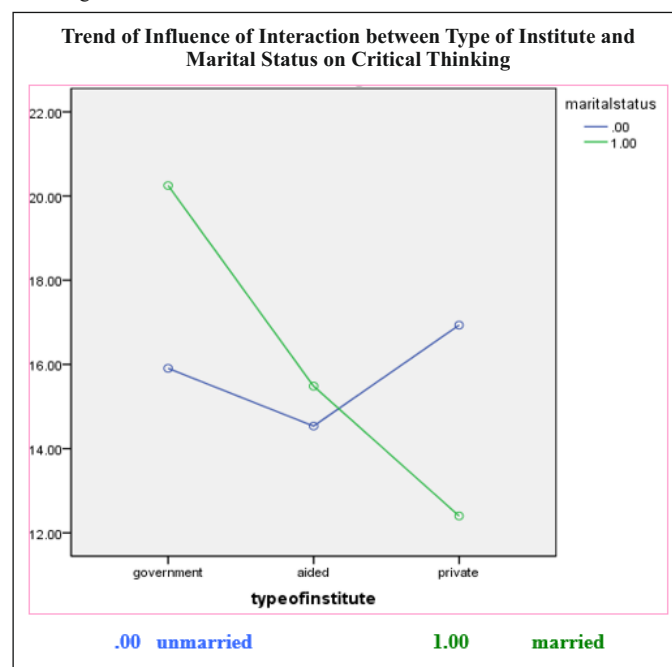
**Influence of Type of Institute on Critical Thinking:** From Table 1, it can be seen that F value for the Type of Institute is 3.02, which is not significant at 0.05 level with  $df = 2/223$ . It indicates that the mean score of Critical Thinking of Pre-Service Secondary School Teachers belonging to Government, Government Aided and Private Colleges of Education do not differ significantly. In this context, the null hypothesis namely, "There is no significant influence of Type of Institute on Critical Thinking of Pre-Service Secondary School Teachers" is not rejected. It indicates that there is no significant difference in the mean scores of Critical Thinking of Pre-Service Secondary School Teachers belonging to Government, Government Aided and Private Institute.

**Influence of Metacognition on Critical Thinking:** From Table 1, it can be seen that F value for the Metacognition is 0.35, which is not significant at 0.05 level with  $df = 2/223$ . It indicates that the mean score of Critical Thinking of Pre-Service Secondary School Teachers belonging to Low, Average and High Metacognition groups do not differ significantly. In this context, the null hypothesis namely, "There is no significant influence of Metacognition on Critical Thinking of Pre-Service Secondary School Teachers" is not rejected. It may, therefore, be said that Critical Thinking of Pre-Service Secondary School Teachers was independent of Metacognition.

**Influence of Marital Status on Critical Thinking:** From Table 1, it can be seen that F value for the Marital Status is 0.01, which is not significant at 0.05 level with  $df = 1/223$ . It indicates that the mean score of Critical Thinking of Pre-Service Secondary School Teachers belonging to married and unmarried Marital Status groups do not differ significantly. In this context, the null hypothesis namely, "There is no significant influence of Marital Status on Critical Thinking of Pre-Service Secondary School Teachers" is not rejected. It may, therefore, be said that Critical Thinking of Pre-Service Secondary School Teachers was independent of Marital Status.

**Influence of Interaction between Type of Institute and Metacognition on Critical Thinking:** From Table 1, it can be seen that F value for the interaction between Type of Institute and Metacognition is 1.16, which is not significant at 0.05 level with  $df = 4/223$ . It indicates that there is no significant influence of the resultant of the interaction between the Type of Institute and Metacognition on Critical Thinking of Pre-Service Secondary School Teachers. In this context, the null hypothesis namely, "There is no significant influence of interaction between Type of Institute and Metacognition on Critical Thinking of Pre-Service Secondary School Teachers" is not rejected. It may, therefore, be said that Critical Thinking of Pre-Service Secondary School Teachers was independent of interaction between Type of Institute and Metacognition.

**Influence of Interaction between Type of Institute and Marital Status on Critical Thinking:** From Table 1, it may be observed that the F value for the interaction between Type of Institute and Marital Status is 5.88, which is significant at 0.05 level with  $df = 2/223$ . It indicates that interaction between Type of Institute and Marital Status produced significant influence on Critical Thinking of Pre-Service Secondary School Teachers. Thus, the null Hypothesis, namely, "There is no significant influence of interaction between Type of Institute and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers", is rejected. Graph 5.1 has been plotted for knowing the trend of influence of interaction Type of Institute and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers. From Graph 5.1 it can be seen that in Government Colleges of Education unmarried Pre-Service Secondary School Teachers had significantly lower mean score of Critical Thinking as compared to the married Pre-Service Secondary School Teachers. The trend was same in case of Aided Colleges of Education. However, in case of Private Colleges of Education unmarried Pre-Service Secondary School Teachers had significantly higher mean score of Critical thinking as compared to married Pre-Service Secondary School Teachers. In the light of these observations, it can be said that Private Colleges of Education were more effective for unmarried Pre-Service Secondary School Teachers while Government and Aided Colleges of Education were more effective for married Pre-Service Secondary School Teachers in term of Critical Thinking.



**Influence of Interaction between Metacognition and Marital Status on Critical Thinking:** From Table 1, it can be seen that F value for the interaction between Metacognition and Marital Status is 0.38, which is not significant at 0.05 level with  $df = 2/223$ . It indicates that there is no significant influence of the resultant of the interaction between the Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers. In this context, the null hypothesis namely, "There is no significant influence of interaction between Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers" is not rejected. It may, therefore, be said that Critical Thinking of Pre-Service Secondary School Teachers was independent of interaction between Metacognition and Marital Status.

Influence of Interaction between Type of Institute, Metacognition and Marital Status on Critical Thinking: From Table I, it can be seen that F value for the interaction between Type of Institute, Metacognition and Marital status is 1.28, which is not significant at 0.05 level with  $df = 3/233$ . It indicates that there is no significant influence of the resultant of the interaction between the Type of Institute, Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers. In this context, the null hypothesis namely, "There is no significant influence of interaction between Type of Institute, Metacognition and Marital Status on Critical Thinking of Pre-Service Secondary School Teachers" is not rejected. It may, therefore, be said that Critical Thinking of Pre-Service Secondary School Teachers was independent of interaction between Type of Institute, Metacognition and Marital Status.

It may, therefore, be concluded that Critical Thinking of Pre-Service Secondary School Teachers was found to be independent of interaction between Type of Institute, Metacognition and Marital Status.

#### REFERENCES:

- I. Adey, P.A. (2001). The categorization & assessment of thinking skills. Paper presented at the EARLI conference. Fribourg, Switzerland. Retrieved from <http://www.criticalthinking.org/resources/sscanlan.pdf>
- II. Lai, E. (2011). Critical thinking: A literature Review. Retrieved from: <http://www.pearsonassessments.com/haiimagestmrns.CriticalThinkingReviewFinal.pdf>.
- III. Lonigan, C. J., & Phillips, B. M. (2001). Temperamental influences on the development of anxiety disorders. In M. W. Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety* (pp. 60–91). New York: Oxford University Press. Retrieved from [www.thejo.com/archiver/vol6no1/arendpaer](http://www.thejo.com/archiver/vol6no1/arendpaer).
- IV. McCormick, D.F., & Whittington, M.S.(2000). Assessing academic challenges for their contribution to cognitive development. *Journal of Agricultural Education*, 41(3), 114-122. Retrieved from [www.insightassessment.com](http://www.insightassessment.com)
- V. McPeck, J.E. (1981). *Critical Thinking and Education*. New York: St. Martin's Press. Retrieved from <http://www.criticalthinking.org/resources/sscanlan.pdf>
- VI. Mosely, D., Baumfield,V., Elliott,J., Gregson,M., Higgins,S., Miller,J., & Newton, D.P.(2005). *Frameworks for thinking: A handbook for teaching and learning*. Cambridge: Cambridge University Press. Retrieved from [www.insightassessment.com](http://www.insightassessment.com)
- VII. Paul, R.(2004). Our concept of critical thinking. Retrived from:<http://criticalthinkingorg/aboutCT/ourconceptsCT.shtml>.
- VIII. Swartz, R. (2003). Infusing critical and creative thinking into instruction in high school classrooms. In D. Fasko (Ed.), *critical thinking and reasoning*. Cresskill, NJ: Hampton Press.
- IX. Watson, G.B., & Glaser, E.M., (1980). *Watson & Glaser critical thinking appraisal manual: Form A & B*. San Antonio, The Psychological corp. Retrieved from <http://harvey.psyc.vt.edu/documents/wagnerharveg siop 2003.pdf>